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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/228,894	01/11/1999	YOSHIHIRO ONO	P/3281-5	7984

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EXAMINER

TRAN, CON P

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 05/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/228,894

Applicant(s)

ONO, YOSHIHIRO

Examiner

Con P. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Masuda et al. U.S. Patent 5,384,843.

Regarding **claim 1**, Masuda et al. teaches a voice switching system (see col. 1, lines 65-68; Fig. 1; and respective portions of the specification), comprising:

a transmitting side attenuation section for attenuating a microphone input voice signal (195) having a first level to produce a transmitted voice signal having a second level (see col. 1, line 57 - col. 2, line 7);

a receiving side attenuation section for attenuating a received voice signal (190) having a third level to produce a speaker output voice signal having a fourth level (see col. 2, lines 17-43);

a transmitting side control section for comparing the first level of the microphone input voice signal with the fourth level of the speaker output voice signal to

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obtain a primary difference therebetween, the transmitting side control section controlling, dependent on the primary difference, an amount of attenuation of the microphone input voice signal in the transmitting side attenuation section (see col. 1, line 54 - col. 2, line 7); and

a receiving side control section for comparing the second level of the transmitted voice signal with the third level of the received voice signal to obtain a secondary difference therebetween, the receiving side control section controlling, dependent on the secondary difference (see col. 8, lines 8-12), an amount of attenuation of the received voice signal in the receiving side attenuation means (see col. 2, lines 17-43);

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 2, 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al. U.S. Patent 5,384,843 in view of Lilja et al. U.S. Patent 5,787,165, and further in view of Furukawa et al. U.S. Patent 5,463,618.

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Regarding **claim 2**, Masuda et al. teaches voice switching system as claimed in claim 1. However, Masuda et al. does not explicitly disclose the receiving side control section further comprising:

a transmitting side signal delay buffer for providing the transmitted voice signal with a delay time, the delay time corresponding to a time for which the transmitted voice signal returns as the received voice signal through a communication line;

a transmitting side signal power estimation section for estimating a signal power of the transmitted voice signal outputted from the transmitting the signal delay buffer;

a receiving side signal power estimation section for estimating a signal power of the received voice signal.

In the same field of endeavor, Lilja et al. teaches (see Fig. 1, Table 1, and respective portions of the specification):

a transmitting side signal delay buffer (see col. 10, line 60 – col. 11 line 19) for providing the transmitted voice signal with a delay time, the delay time corresponding to a time for which the transmitted voice signal returns as the received voice signal through a communication line (see col. 13, lines 48-64);

a transmitting side signal power estimation section for estimating a signal power of the transmitted voice signal outputted (see col. 6, lines 43-52) from the transmitting the signal delay buffer (see col. 7, lines 1-23);

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a receiving side signal power estimation section for estimating a signal power of the received voice signal (see col. 6, lines 53-62);
in order to determine which path has control and for dynamically controlling the path gain of both the send path and the receiver path (see col. 3, lines 57-59);

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included within the Masuda et al. reference a voice switching system as taught by Lilja et al. since such combination would have determined which path has control and for dynamically controlling the path gain of both the send path and the receiver path as suggested by Lilja et al. in column 3, lines 57-59.

It should be noted that Masuda and Lilja in combination fails to clearly teach:

a first comparator for comparing a primary estimated signal power of the transmitted voice signal estimated by the transmitting side signal power estimation section with a secondary estimated signal power of the received voice signal estimated by the receiving side signal power estimation section to obtain a ratio therebetween;
and

a first attenuation amount calculation section for calculating an amount of attenuation in the receiving side attenuation section based on the ratio outputted from the first comparator.

In the same field of endeavor, Furukawa et al. teaches (see Fig. 1, 2, and respective portions of the specification):

a first comparator (213) for comparing a primary estimated signal power of the transmitted voice signal estimated by the transmitting side signal power estimation

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section with a secondary estimated signal power of the received voice signal estimated by the receiving side signal power estimation section to obtain a ratio therebetween (see col. 7, lines 5-39); and

a first attenuation amount calculation section for calculating an amount of attenuation in the receiving side attenuation section based on the ratio outputted from the first comparator (see col. 14, lines 7-13);
in order to be able to improve the tracking performance to echo path changes (see col. 4, lines 7-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included within the Masuda and Lilja in combination a voice switching system, as taught by Furukawa et al., since such combination would have been able to improve the tracking performance to echo path changes as suggested by Furukawa et al. in column 4, lines 7-13

Regarding **claim 4**, Masuda et al. teaches a voice switching system as claimed in claim 1. However, Masuda does not explicitly disclose a transmitting side controller further comprising:

a microphone input power estimation section for estimating a signal power of the microphone input voice signal;

a speaker output signal delay buffer for providing the speaker output voice signal with a delay time, the delay time corresponding to a time for which a voice outputted from the speaker becomes the microphone input voice signal by a sound

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coupling with the microphone.

In the same field of endeavor, Lilja et al. further teaches (see Fig. 1, and respective portions of the specification):

- a microphone (175) input power estimation section for estimating a signal power of the microphone input voice signal (see col. 5, lines 44-49);

- a speaker output signal delay buffer for providing the speaker output voice signal with a delay time, the delay time corresponding to a time for which a voice outputted from the speaker becomes the microphone input voice signal by a sound coupling with the microphone (see col. 10, lines 51-65);

It should be noted that Masuda and Lilja in combination fails to clearly teach:

- a first speaker output power estimation section for estimating a signal power of the speaker output voice signal outputted from the speaker output signal delay buffer;

- a second comparator for comparing an estimated signal power of the microphone input voice signal estimated by the microphone input power estimation section with an estimated signal power of the speaker output voice signal estimated by the first speaker output power estimation section to obtain a ratio therebetween; and

- a second attenuation amount calculation section for calculating an amount of attenuation in the transmitting side attenuation section based on the ratio outputted from the second comparator.

In the same field of endeavor, Furukawa et al. further teaches (see Fig. 1, 2, and respective portions of the specification):

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a first speaker output power estimation section (6) for estimating a signal power of the speaker output voice signal outputted from the speaker output signal delay buffer (see col. 5, lines 53-56 and col. 7, lines 40-45);

a second comparator for comparing an estimated signal power of the microphone input voice signal estimated by the microphone input power estimation section with an estimated signal power of the speaker output voice signal estimated by the first speaker output power estimation section to obtain a ratio therebetween (see col. 7, lines 5-39); and

a second attenuation amount calculation section for calculating an amount of attenuation in the transmitting side attenuation section based on the ratio outputted from the second comparator (see col. 14, lines 7-13 and col. 7, lines 40-45).

5. **Claims 3 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al. U.S. Patent 5,384,843 in view of Lilja et al. U.S. Patent 5,787,165, further in view of Furukawa et al. U.S. Patent 5,463,618, and further in view of Fujii et al. U.S. Patent 5,940,499.

Regarding **claim 3**, Masuda in view of Lilja, and further in view of Furukawa teaches voice switching system as claimed in claim 2. However, Masuda in view of Lilja, and further in view of Furukawa does not explicitly disclose a voice switching system wherein:

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the receiving voice signal inputted to the receiving side signal power estimation section is silent at the initial time when the C voice signal is inputted to the transmitting side signal delay buffer.

In the same field of endeavor, Fujii et al. teaches (see Fig. 2, and respective portions of the specification):

the receiving voice signal inputted to the receiving side signal power estimation section is silent at the initial time when the receiving voice signal inputted to the receiving side signal power estimation section is silent at the initial time when the transmitted voice signal is inputted to the transmitting side signal delay buffer (see col. 3, lines 52-63) in order to provide a conversation as smooth as one taking place when a handset is used (see col. 1, lines 44-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included within the Masuda, Lilja and Furukawa in combination a voice switching system, as taught by Fujii, since such combination would have provided a conversation as smooth as one taking place when a handset is used as suggested by Fujii et al. in column 1, lines 44-46.

Regarding **claim 5**, Masuda in view of Lilja and further in view of Furukawa in combination teaches voice switching system as claimed in claim 4.

However, Masuda, Lilja and Furukawa in combination does not explicitly disclose a voice switching system wherein the microphone input voice signal inputted to the

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microphone input power estimation section is silent at the initial time when the speaker output voice signal is inputted to the speaker output signal delay buffer.

In the same field of endeavor, Fujii et al. further teaches (see Fig. 2, and respective portions of the specification):

a microphone input voice signal inputted to the microphone input power estimation section is silent at the initial time when the speaker output voice signal is inputted to the speaker output signal delay buffer (see col. 3, lines 52-63).

6. **Claims 6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al. U.S. Patent 5,384,843 in view of Furukawa et al. U.S. Patent 5,463,618.

Regarding **claim 6**, Masuda further teaches the transmitting side control section further comprising (see col. 1, lines 65-68; Fig. 1, and respective portions of the specification):

a residual echo power estimation section for estimating a signal power of a residual echo signal obtained by the microphone input voice signal passing through an acoustic echo canceller (see col. 1, line 54 – col. 2, lines 15);

a second speaker output power estimation section for estimating a signal power of the speaker output voice signal passing through the acoustic echo canceller (see col. 1, line 54 – col. 2, lines 15);

However, Masuda et al. does not explicitly disclose:

a third comparator for comparing an estimated signal power of the residual echo signal estimated by the residual echo power estimation section with an estimated signal power of the speaker output voice signal estimated by the second speaker output power estimation section to obtain a ratio therebetween; and

a third attenuation amount calculation section for calculating an amount of attenuation in the transmitting side attenuation [means] section based on the ratio outputted from the third comparator.

In the same field of endeavor, Furukawa et al. further teaches (see Fig. 1, 2, and respective portions of the specification):

a third comparator for comparing an estimated signal power of the residual echo signal estimated by the residual echo power estimation section with an estimated signal power of the speaker output voice signal estimated by the second speaker output power estimation section to obtain a ratio therebetween (see col. 5, line 66 – col. 6, line 12); and

a third attenuation amount calculation section for calculating an amount of attenuation in the transmitting side attenuation [means] section based on the ratio outputted from the third comparator (see col. 5, line 66 – col. 6, line 12).

Regarding **claim 7**, Furukawa et al. further teaches (see Fig. 16 and respective portions of the specification) a voice switching system as claimed in claim 6, wherein the acoustic echo canceller sequentially renews an adaptive filter coefficient stored in an adaptive filter coefficient buffer by the use of the residual echo signal and a value of

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an adaptive filter tap input buffer (see col. 17, lines 32-50), the residual echo signal being outputted from a subtractor to which the microphone input voice signal is inputted, and wherein a sum of products between the adaptive filter coefficient of the adaptive filter coefficient buffer and the value of the adaptive filter tap input buffer and the value of the adaptive filter tap input buffer is calculated in a sum of products operator (see col. 16, lines 26-36), a result of the calculation being subtracted by the subtractor from the microphone input voice signal, thereby the residual echo signal being outputted (see col. 17, line 51 – col. 18, line 7).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inventor	Publication	Number	Disclosure
Hosoi	US Patent	6,097,971	A hands-free speech communication apparatus incorporating an echo canceller.
Addeo et al.	US Patent	5,386,465	Audio processing system for teleconferencing with high and low transmission delay.
Carew et al.	US Patent	5,058,153	Noise mitigation and mode switching in communications terminals such as telephones.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran whose telephone number is (703) 305-2341. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Customer Service Office at telephone number (703) 306-0377.

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